Hospital Instrumentation Webinar Presentation Outline

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Presentation objectives:

- Highlight the importance of pre-established post-earthquake response plans that empower onsite staff to make informed decisions in the critical period before outside engineers arrive.
- Illustrate how seismic instrumentation serves as a decision-support tool within a comprehensive post-earthquake response plan, helping hospitals prioritize inspections, allocate resources, and maintain safe operations.
- Encourage broader adoption of seismic instrumentation by addressing outdated assumptions about technology, cost, implementation, and the role of instrumentation in post-earthquake decision-making.

Working title for consideration

Healthcare Facility Seismic Instrumentation: A Tool for Better Post-Earthquake Decision Making

(Using seismic instrumentation to improve hospital response, maintain operations, and support informed decisions following earthquakes)

DRAFT OUTLINE

1) Introduction – why this matters
   a) Provide an opening scenario (an earthquake has just occurred)
   b) How do you decide whether to continue operations, shelter in place, evacuate patients, send engineers to inspect one building versus ten?
2) Why Immediate Decisions Matter
   a) Challenges after an earthquake such as:
      i) Every hospital must make immediate operation decisions after an earthquake
      ii) Inspection engineers may not arrive for some time
      iii) Hospital staff must make initial decisions with limited information
      iv) Unnecessary evacuation can itself create serious patient risk
      v) Delayed action can also increase risk
      vi) Hospitals must balance safety with continued operations
   b) Examples may be provided such as the following that have been noted in the white paper or during previous subcommittee meetings:
      i) Hospital in Turkey
      ii) Ridgecrest evacuation
      iii) Northridge experiences
3) Why Traditional Assessment Isn't Enough

a) Earthquake > Visual Observations > Wait for Inspection > Building Inspections > Operational Decisions
b) Challenges include the time required, limited engineering resources post-earthquake, multiple buildings, regional impacts, uncertainty
c) What if facility staff had meaningful information immediately and were trained how to respond?

4) What Seismic Instrumentation Provides
   a) Can tell us:
      i) How much the building actually shook
      ii) How the building responded
      iii) Whether the response was consistent with expected performance
      iv) Which buildings deserve immediate attention
5) Instrumentation Within a Response Plan
   a) Instrumentation is one tool and does not replace emergency response plans, engineering judgement, inspections, HCAI requirements
   b) Earthquake > Instrumentation reports building response > Hospital activates response plan > Facility staff perform predefined actions > Post-earthquake inspection engineers validate and expand assessment
   c) Instrumentation is valuable because it informs an already established response plan
6) Planning Before the Earthquake
   a) Develop response protocols before an earthquake occurs
      i) Who receives alerts?
      ii) Who reviews alerts?
      iii) Who makes operational decisions?
      iv) When are engineers contacted?
      v) What actions correspond to different alert levels?
   b) Each healthcare facility develops its own response thresholds specific to the structure and administrative needs
   c) Example response protocols to illustrate that training of onsite staff can focus on implementation of the protocols, rather than requiring engineering judgement to assess conditions and make decisions
      i) Green = continue operations, conduct routine visual assessment
      ii) Yellow = activate response team, prioritize engineering evaluation for the site, visually assess selected systems
      iii) Red = immediate inspection engineer prioritization, consider operational restrictions, follow evacuation protocols if warranted
7) Practical Applications
   a) For individual hospitals, instrumentation helps answer the following questions:
      i) Is the building likely safe?
      ii) Should inspections be prioritized?
      iii) Should critical systems be checked?
      iv) Can services continue?
   b) For multi-building campuses or healthcare systems with multiple campuses, instrumentation can help determine:

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    i) Where to prioritize inspections
    ii) Where to allocate emergency resources
    iii) Which facilities likely remain operational
8) Addressing Common Misconceptions
    a) Instrumentation replaces engineers – instrumentation is a tool that can help engineers respond more efficiently
    b) Instrumentation makes decisions automatically – people still make the decisions, but instrumentation improves the information available so better-informed decisions can be made
    c) Instrumentation is only useful for research level details – modern systems can provide near real-time information for emergency response while also supporting long-term improvements to building design
    d) Instrumentation is prohibitively expensive – technology has advanced considerably, today there are many approaches available that include lower cost sensor technologies and scalable systems
    e) Hospitals must wait for inspection engineers before taking any action – hospitals should have a response plan that empowers trained onsite personnel to make informed initial decisions until engineering support arrives
9) Examples of Current Technology
    a) Brief examples illustrating the accessibility of immediate post-earthquake data with available technology
        i) Traditional strong-motion instrumentation
        ii) MEMS sensors
        iii) Cloud based systems
        iv) Building dashboards
        v) Mobile notifications
10) Closing
    a) Every hospital should have a post-earthquake response plan
    b) Instrumentation strengthens that plan by providing rapid, building-specific information before inspection engineers arrive
    c) The goal is not simply collecting data, but to make better decisions that protect patients, staff, and hospital operations

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